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Silicon MicroBench Heater Elements for Packaging Opto-Electronic Devices*

Richard Combs, Sol Dijaili, Perry Keiser, Kirk Kleint, Mike Pocha,
Frank Patterson, Ted Strand

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Abstract:

This presentation will provide examples of the application of Lawrence Livermore National Laboratory's (LLNL) expertise in photonics packaging. Several examples of packaged devices will be shown. Particular attention will be given to silicon micro-bench heaters and their use in semiconductor optical amplifier fiber pigtailing and packaging.

Silicon micro-bench heater substrates facilitate alignment of fibers to a broad range of devices. They also make possible soldering of metalized fibers to the micro-bench while maintaining critical fiber alignment. Utilizing this technology results in robust designs suitable for deployment of commercial devices as well as designs intended solely to facilitate laboratory measurements. For example, a "research" package for studying the ultra-fast, femto-second dynamics in semiconductor optical amplifiers involves the pigtailing of very short conically-tipped fibers to our 7° angled facet devices.

The cost of packaging opto-electronics devices must be minimized for successful commercialization. A brief update on the ARPA-sponsored Automated Opto-Electronic Packaging Program at LLNL, which takes advantage of the silicon heater technology, will also be presented.

Biography

Richard Combs is a Senior Engineering Associate at LLNL. He has provided opto-mechanical support for the Laser Fusion and Isotope Separation Programs at LLNL. His interests include opto-mechanical system design for visible and IR systems, fiber optic packaging, and optics fabrication technology. He is an avid amateur telescope and mirror maker, and has been a member of the board of the Northern California Chapter of SPIE.

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